

Means of Egress

A Refresher

Presented by

Joe Versteeg

Code Compliance & Fire Safety Consultants

86 University Drive

Torrington CT 06790

860 480 3951

jhversteeg@aol.com

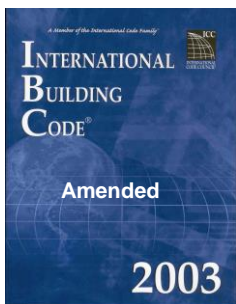
Objective

This lecture will examine the fundamental requirements of the Building and Fire Safety Codes governing means of egress for new and existing buildings, common misapplications, and significant changes in newer IBC and NFPA codes.

Agenda

- Fundamentals
- Occupant Load
- Egress Capacity
- Egress Arrangement
- Door Locking

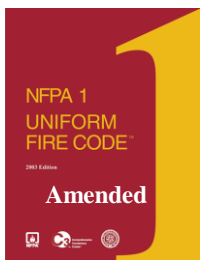
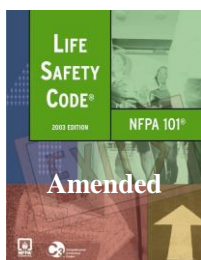
Existing Buildings



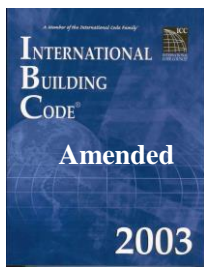
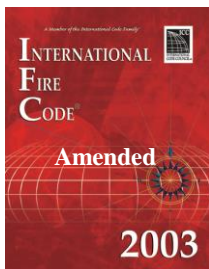
w/o Changes

- Maintenance
- Unsafe structures/equipment
- Emergency measures
- Vacant buildings

Existing Buildings

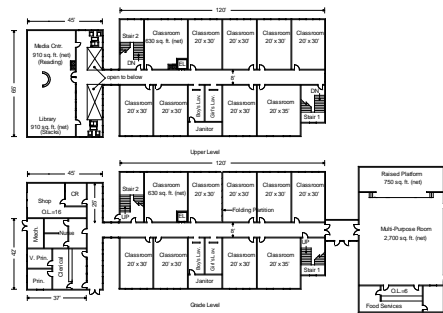


New Construction and Alterations in Existing Buildings (non CFSC abatement)



Egress Fundamentals

Means of Egress

















Occupant Loads & Egress Capacity

Capacity cont'd

Capacity determined in 5 steps

1. Determine occupant load
2. Determine component clear width
3. Determine component capacity
4. Determine capacity of each route
5. Determine total capacity \geq OL

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Occupant Load

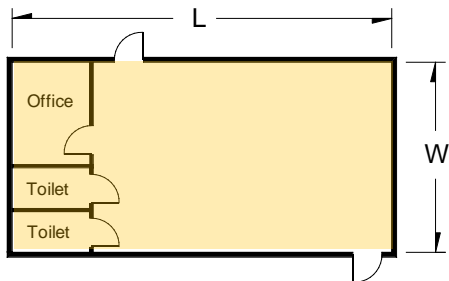
Actual maximum number of occupants,
but not less than

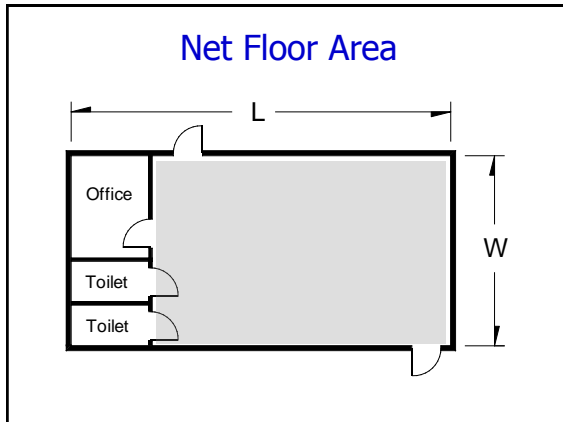
$$\frac{\text{Floor area}}{\text{Occupant Load Factor}}$$

Occupant Load Factors

Business	100 sq. ft. - gross
School Classroom	20 sq. ft. - net
School Shops	50 sq. ft. - net
Kitchens	100 sq. ft. - gross
Exercise Rooms	50 sq. ft. - gross
Assembly	7/15 sq. ft. - net

Gross Floor Area

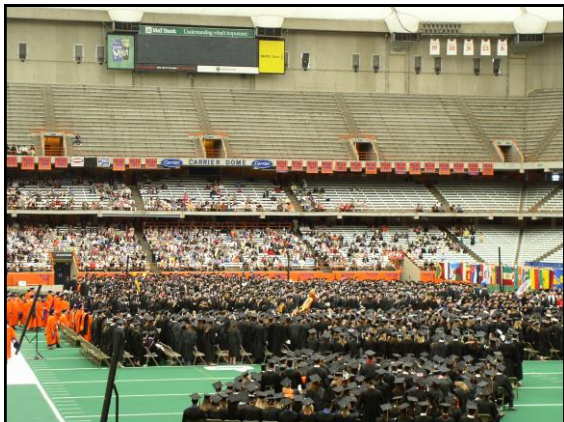


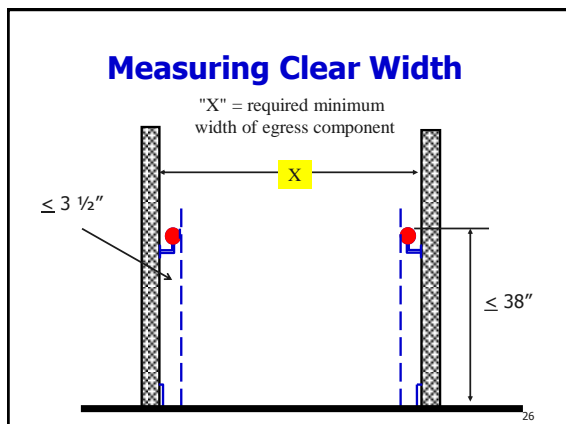


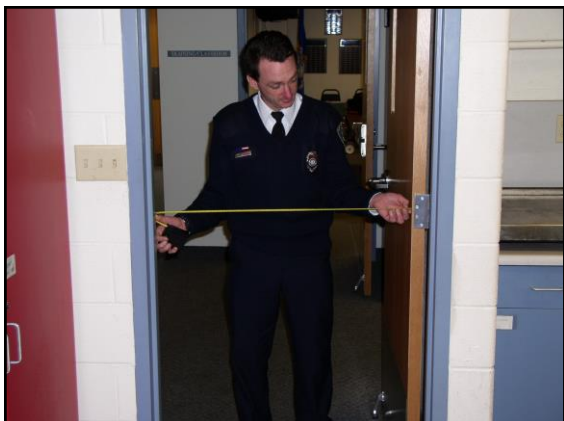
Occupant Load Increases

- Occupant load may be increased from calculated occupant load if all requirements of the Code are met
- Occupant load of each story considered individually









Calculating Capacity

Determine egress capacity of each component

$$\frac{\text{Clear width}}{\text{Capacity factor}}$$

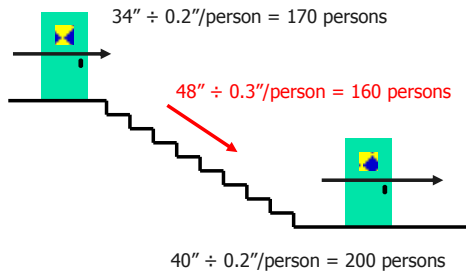
Calculating Capacity

<u>Capacity Factors</u>	<u>Stairs</u>	<u>Level</u>
High Hazard	0.7	0.4
All Others	0.3	0.2

Calculating Capacity

- Determine Egress Capacity of Each Egress Route
- The most restrictive capacity of a component determines capacity of system

Capacity of Egress Route



Calculating Capacity

$$\begin{array}{ccc} \text{Egress} & & \text{Occupant} \\ \text{Capacity} & \geq & \text{Load} \end{array}$$

Balanced Egress



Balanced Egress

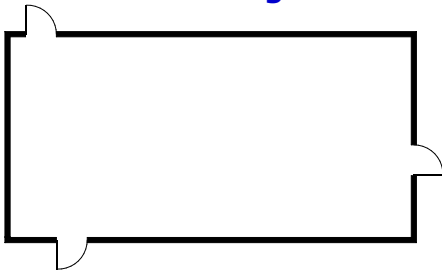
EC=150

OL=300

EC=150



Balanced Egress



Balanced Egress

EC=160

OL=620

EC=160

EC=300



Numbers of... and Arrangement

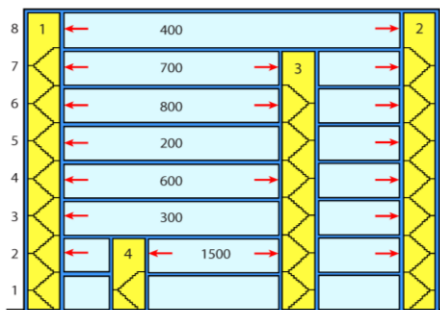
Number of Means of Egress

- 1-500..... 2
- 501-1,000..... 3
- $\geq 1,001$ 4

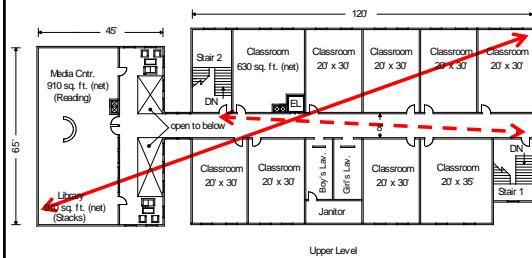
excp: Existing

excp: Specific occupancies

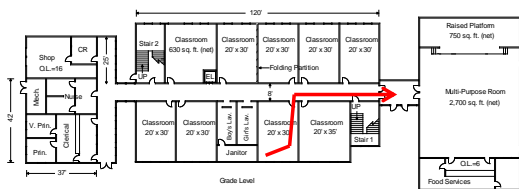
Number of Means of Egress



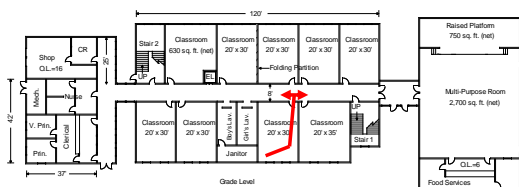
Remoteness

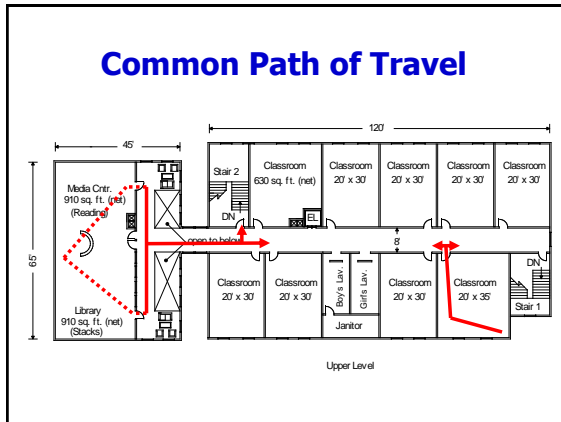
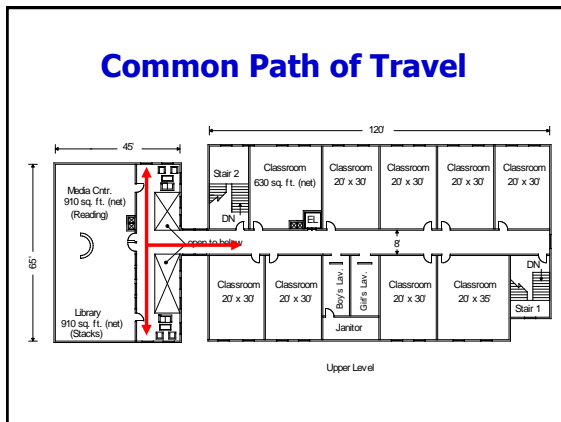


Travel Distance



Common Path of travel



[illegible][illegible]

Locks & Latches

Rules

- Readily operable from the egress side
- Releasing device – obvious method of operation
- Readily operated under all lighting conditions
- No key, tool, special knowledge or effort
- ≤ 1 releasing operation

Simple Latch Release



One Releasing Operation



Prohibited Actions



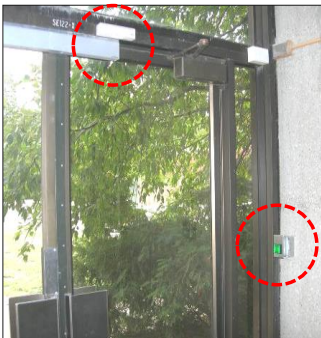
Panic/Fire Exit Hardware

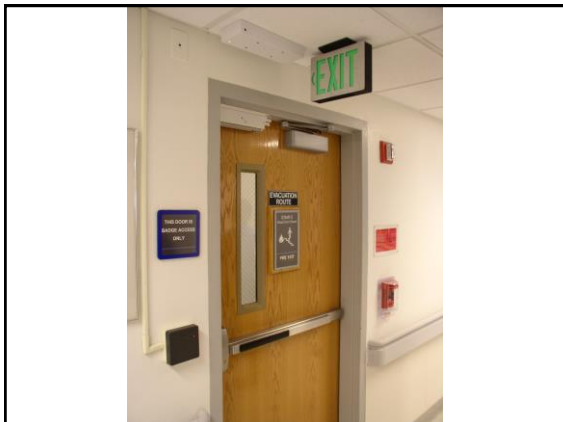
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Delayed Egress Locks



Access Control





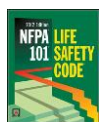








Delayed Egress Locks



Problem?



Not Permitted for corridor doors per 2005 CFSC Part IV

Corridor Walls



2005 CFSC Part IV

- w/o AS – ½ hour fire barrier
- w/ AS – 0 hour smoke partition

2005 CSBC & CFSC Part III

- w/o AS – 1 hour fire barrier
- w/ AS – 0 hour – no other requirements

Fire Drills

Emergency Egress & Relocation Drills



Rules

- 2 per first month
- 1 per month thereafter
- NR during severe weather, but 4 required prior to severe weather
- Use the fire alarm system
- Everyone participates
- *Change it up*

Definitions

Emergency Evacuation Drill

- Exercise performed to train staff and occupants; and to evaluate their effectiveness and efficiency in carrying out evacuation procedures

Lockdown

- Emergency situation requiring occupants to be sheltered & secured in place in the building, when evacuation puts occupants at risk



Rules

Fire Evacuation Plans

- Egress routes
- Procedures for assisted rescue
- Accounting procedures
- Medical aid personnel
- Reporting means
- Contact persons



Rules

Fire Safety Plans

- Reporting methods
- Evacuation/relocation strategies
- Site plans
- Floor plans
- List of fire hazards
- Personnel and duties



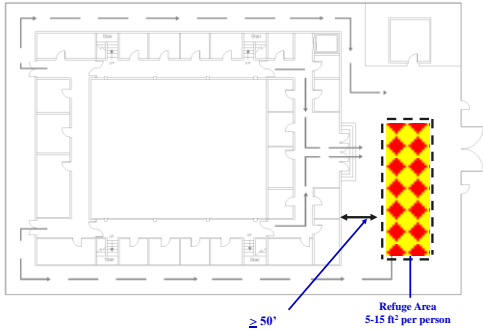
Rules

Lockdown Plans

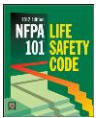
- Procedure for reporting an incident that requires lockdown
- Occupant accountability
- Signal to return to normal activities
- 2-way communication between central location and secured area(s)
- Drills are separate from evacuation drills



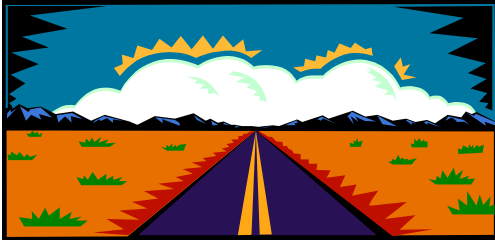
Refuge Areas



Lock-up Facilities



Questions or Comments



Drive Safe
